

NOVEMBER/DECEMBER 2025

**23UEL31 — SEMICONDUCTOR DEVICE
AND IC FABRICATION TECHNOLOGY**

Time : Three hours

Maximum : 75 marks



SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Define UJT and mention its main applications.
2. Write two differences between UJT and SCR.
3. What is Schottky effect?
4. Write any two applications of solar cell.
5. How to prepare monolithic IC?
6. What are LSI and VLSI?
7. Define slew rate.
8. Write two characteristics of an ideal Op-amp.
9. What is an integrator circuit?
10. Mention two applications of active filter.

SECTION B — ($5 \times 5 = 25$ marks)

Answer ALL questions.

11. (a) Explain the working of SCR as a switch.
- Or
- (b) List and explain the applications of UJT in triggering circuits.
12. (a) Explain the working and characteristics of photodiode.
- Or
- (b) Draw the circuit diagram of semiconductor laser diode and explain its working.
13. (a) Write short note on IC packing and symbols.
- Or
- (b) Describe the fabrication steps of monolithic ICs.
14. (a) Explain the working of BJT differential amplifier.
- Or
- (b) Discuss the transfer characteristics of an operational amplifier.

15. (a) Draw the circuit of Adder and Subtractor using Op-amp and explain its working.

Or

- (b) Describe the construction of Sine waveform generator and explain its working.

SECTION C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Describe the construction and VI characteristics of a TRIAC.
17. Discuss the circuit diagram of solar cell and explain its working principle.
18. Briefly explain the thin and thick film technology of LSI, MSI and VLSI.
19. Explain in detail the internal circuit diagram of IC 741.
20. With circuit diagram, explain the working of Op-amp integrator and differentiator.

